

WHAT IS CLAIMED IS

- Sub 1 → 1. A mucin-DNA (deoxyribonucleic acid) complex formed by combining said mucin and said DNA in any configuration for the transport of said mucin-DNA complex into a cell using either *in vivo* or *in vitro* methods.
2. A mucin-biomolecules complex formed by combining said mucin and said biomolecules in any configuration for the transport of said mucin-biomolecules complex into a cell using either *in vivo* or *in vitro* methods.
3. Mucin as in claims 1 and 2, where said mucin can be a combination of one or more different types of mucin molecules obtained from any biological or non-biological source.
4. Mucin, as in claims 1 and 2, where said mucin can be in its native state or modified using any biological, chemical, enzymatic, heat-based or other means of modification.
5. Mucin, as in claims 1 and 2, where said mucin can contain sialic acid and its derivatives.
6. DNA, as in claims 1 and 2, where said DNA can be DNA or any other nucleic acid derived in a natural state, modified, or created synthetically and in any shape including linear, circular, single or double-stranded.

7. Biomolecules, as in claim 2, where said biomolecules may consist of one or more biomolecules from the group consisting of, but not limited to, DNA, RNA, nucleic acids, proteins, peptides, antibodies, glycolipids, glycoproteins, natural, synthetic and modified polymers, or any combination thereof.

8. Biomolecules, as in claim 2, where said biomolecules can be derived in a natural state, modified, or created synthetically.

9. A mucin-DNA complex as in claim 1 and mucin-biomolecules complex as in claim 2, where said complex can be purified by any chromatographic methods.

10. A mucin-DNA complex as in claim 1 and mucin-biomolecules complex as in claim 2, where said complex can be purified by any centrifugation methods.

11. A mucin-DNA complex as in claim 1 and mucin-biomolecules complex as in claim 2, where said mucin in said complex can undergo any modifications including, but not limited to, the addition, removal or alternation or carbohydrate or protein components or molecules of said mucin.

12. A mucin-DNA complex as in claim 1 and mucin-biomolecules complex as in claim 2, where said mucin in said complex can be modified to target specific cells as the targets of transfection.

13. A mucin-DNA complex as in claim 1 and mucin-biomolecules complex as in claim 2, where said complex can be used in applications including but not limited to gene therapy, cell repair, cell modification or the production of specific proteins or enzymes in specific cells.

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1. The first step is to identify the problem. This involves understanding the situation and the goals that need to be achieved.